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DEVICE FOR THE CONNECTION OF PROFILED RODS

The invention pertains to a device for the connection of a first profiled rod*

[*Translator's note: Also known as extruded, sectional or shaped rod] to a second profiled rod,

resting on the front end against a longitudinal side of the first profile, whereby the profile rods are designed so that along their longitudinal sides they have undercut longitudinal grooves, comprising a locking screw, having a screwhead (chucking device) and a threaded shank, which locking screw can be fixed in the area of the screwhead in the undercut longitudinal groove of the first profiled rod, and with the help of its threaded shank can be screwed into a longitudinal borehole, designed in the second profiled rod.

Such devices for the connection of profiled rods are multifariously known, and, therefore, reference is made in an exemplified way only to DE 195 20 892 A1, DE 90 06 344 U as well as DE 91 13 802 U1.

Inherent to all these known devices is that they are provided with a connecting plate to be attached on the front side on the second profiled rod, which connecting plate is fixed on the second profiled rod with the help of a locking screw, which can be screwed into a central longitudinal borehole of the second profiled rod. After that the connection of the second profiled rod - outfitted in such a way with the connecting plate - on the first profiled rod is produced by means of additional screws, interacting with sliding [crank] blocks in the first profiled rod which screws are also led through the connecting plate. As a result, a connection is achieved between the two profiled rods, which connection does not have any

attachment means, protruding beyond the circumference of the two profiled rods, joined together, which fact is extraordinarily desirable. However, in the case of the known devices, elucidated above, disadvantageous to the connection of the profiled rods is the fact that a multiple number of structural components, namely connecting plate, more sliding blocks, as well as more attachment and clamping screws are required, in order for the desired connection to be produced, which - on the one hand - is expensive, and - on the other hand - also unnecessarily complicates the installation of such a device.

Another known kind of attachment between two profiled rods provides for the frontal-side screwing of the second profiled rod by means of a locking screw, passing through the first profiled rod, transversely to its longitudinal extension. However, in doing so, the design of a corresponding through-borehole for the locking screw in the first profiled rod is required, which is extremely expensive, and, therewith, undesirable.

Hence, the objective of the invention is to improve to such an extent a generic device for the connection of a first profiled rod to a second profiled rod, resting on the front side against a longitudinal side of the first profile, that with the help of a minimal possible number of parts - while the installation is simplified - a connection can be achieved, which is not visible from outside, and which is of

great advantage from an optical as well as from a technological standpoint.

In order for the set objective to be achieved, the invention proposes the embodiment of a device for the connection of a first profiled rod to a second profiled rod, in accordance with the feature of claim of protection 1.

Advantageous embodiments and refinements of the invention are object of claims 2 thru 12.

In order for the set objective to be achieved, it is proposed in accordance with the invention that the screwhead of the locking screw, belonging to the device in accordance with the invention, has a gear-tooth system in the area of its outer circumference, which gear-tooth system can be operationally connected to a turning tool. As a result of corresponding embodiment of the locking screw, embodied in accordance with the invention, additional structural components, such connecting plates, grooves as well as additional attachment screws, besides the locking screw, can be dispensed with in the case of the device in accordance with the invention.

Essential features of the locking screw in accordance with the invention are cited in claims of protection 13 through 16.

Advantageously, the screwhead of the device - in accordance with the

invention - is designed as having a larger diameter than that of the threaded shank, and it grabs behind the undercut longitudinal groove in the first profiled rod.

In such a way, a connection is made possible between two profiled rods, in the case of which connection it is only necessary to introduce the locking screw with its screwhead into the undercut longitudinal groove of the first profiled rod whereby the threaded shank protrudes then transversely to the longitudinal direction of the first profiled rod, out of the undercut longitudinal groove. Upon this protruding threaded shank, there can be placed the second profiled rod to be attached together with its longitudinal borehole, designed as a continuous one in the longitudinal direction, and by screwing-in the locking screw into this borehole, the second profile can be fixed on the longitudinal side of the first profiled rod in the desired manner. Because the locking screw in accordance with the invention is provided with a tooth system in the area of its screwhead, an opportunity is provided to introduce a turning tool from outside onto the locking screw, already arranged in the undercut longitudinal groove of the first profiled rod, and to bring the tooth system in operative connection so that in the case of already fastened second profiled rod the turning of the locking screw and the screwing-in, generated into the longitudinal direction of the second profiled rod, can be accomplished. After the turning tool has been removed, the connection, thus produced by means

of the locking screw cannot anymore be seen directly from outside. The retrofitting and expensive design of boreholes in a profile, needed for the fixing of a turning tool into the locking screw, is not necessary. In a preferred embodiment form of the device in accordance with the invention, the screwhead of the locking screw is designed as having a collar in the transitional area to the threaded shank, which collar has an enlarged diameter in comparison to the screwhead and the threaded shank, and protrudes transversely to the screwing axis beyond it, and the tooth system is designed in the area of the outer circumference of the collar. When the screwhead is inserted into the undercut longitudinal groove of the first profiled rod, the collar grips behind the webs (stems), delineating the longitudinal groove of the first profile, and forms a contact surface, which produces the desired connection to the second profiled rod, after the locking screw has been tightened.

The turning tool for the locking screw has a tooth system, designed on the outer circumference, corresponding to the tooth system of the locking screw, and, e.g., can be designed as rod-shaped. When the turning tool is turned about its longitudinal axis, the turning tool's tooth system engages - in a way resembling a toothed gear - into the tooth system of the locking screw, to which end the tooth system, having a corresponding profile and module is designed.

In order for the installation of the device in accordance with the invention to

be simplified, it is advantageous to provide a anti-twisting plate (locking plate), which can be attached on the front on the second profiled rod by means of the locking screw, passed through a two-way borehole, designed in the anti-twisting plate. In its fixed position on the front side on the second profiled rod, the anti-twisting plate engages - when the second profiled rod is fixed on the first profiled rod in the alignment, provided for the attachment - into the longitudinal groove of the first profiled rod so that a securing against torsional shear is created between the second and the first profiled rods, as result of this engagement. Moreover, the anti-twisting plate has at least a guiding borehole, communicating with the tooth system of the locking screw, into which guiding borehole the turning tool can be introduced, and brought into operative connection with the tooth system, as a result of which handling of the device in accordance with the invention is significantly simplified. In this case, the turning tool has merely to be inserted into the guiding borehole - designed in the anti-twisting plate - as a result of which the turning tool is automatically guided into such a position, in which the activation of the locking screw by means of engagement into the tooth system, is made possible. Concurrently, the turning tool is secured against sideslipping out of the position that makes the tooth-system engagement possible.

In order to further improve the function of the anti-twisting plate - of the

device in accordance with the invention - in its capacity as locking against torsional rotation or torsional shear, this anti-twisting plate can have on at least one of its ends - which are lying in the longitudinal direction of the first profiled rod - a projection, which is warped or angular in the direction of the second profiled rod. Which projection engages into the longitudinal groove of the second profiled rod. Preferably, this engagement into the longitudinal groove can also take place - as the engagement into the longitudinal groove of the first profiled rod - in a form-fitting way (positive connection) in the remaining area of the anti-twisting plate so that after the fixing of the second profiled rod on the first profiled rod, any torsional rotation of the first with respect to the second on is cancelled.

In order to provide a uniformly adequate access to the locking screw of the device in accordance with the invention, the locking plate has advantageously on both sides of the two-way borehole for the locking bolt a guiding borehole for the turning tool, respectively.

Within the framework of an advantageous refinement of the invention, it is proposed that the locking plate is designed as expanded in its area, surrounding the two-way borehole for the locking screw, so that the locking plate - when insertion takes place into the undercut longitudinal groove of the first profiled rod - grips

behind the longitudinal groove with it expanded area. In this case, the screwhead and/or the collar with the integrally molded collar is not directly supported on the webs, delineating the undercut longitudinal groove of the first profiled rod, but gets an additional clamping and contact surface with respect to these webs by means of the expanded area of the locking plate, which fact increases the strength of the connection, achievable with the help fo the device in accordance with the invention.

In order for the device in accordance with the invention to appear as invisible as possible from outside - after it has been installed - the anti-twisting (locking) plate is advantageously embodied so that it locks flush with the second profiled rod - when contemplated in the longitudinal direction of the first profiled rod - and the guiding boreholes for the turning tool communicate with a longitudinal groove of the second profiled rod, respectively. Therewith, it is possible to introduce the turning tool by way of the longitudinal grooves of the second profiled rod, which are accessible from outside, and to position it so that the desired engagement into the tooth system of the locking screw is materialized.

In another possible embodiment form of the invention, provisions are made that a template part can be inserted in such a way into the longitudinal groove of the first profile rod that it can longitudinally be displaced in it, and can be applied

onto a longitudinal side of the second profiled rod. This template part has a guiding borehole, which - when the template part is applied onto the second profiled rod - communicates with the tooth system of the locking screw, so that the turning tool can again be introduced into the guiding borehole, and be brought into operative connection with the tooth system. Consequently, the template part is inserted into the longitudinal groove of the first profiled rod over the course of the installation of the device in accordance with the invention, and is used in order for the connection to be produced, i.e. for the activation of the locking screw, which uses the guiding borehole, designed in the template part, for the positioning of the turning tool. As soon as the locking screw is strongly tightened, and the desired connection between the first and the second profiled rod is therewith made, the turning tool and also the template part are removed, so that an almost invisible connection between the first and the second profiled rods is created.

To facilitate use, the template part is advantageously provided with a locking or clamping device, by means of which the template part can be fixed in a desired position in the longitudinal grove of the first profiled rod. For example, this clamping device can be formed by a setscrew, penetrating the template part, and supported on the groove bottom (keyway bottom) of the longitudinal groove of the first profiled rod.

Additional particularities of the device in accordance with the invention are elucidated in greater detail by means of exemplified embodiments in the drawing, wherein

Fig. 1 is a partial cut of a side view through a profiled connection, created with the help of the device in accordance with the invention;

Fig. 2 is a top view of the profiled connection, depicted in Fig. 1;

Fig. 3 is another embodiment form of the invention;

Figs. 4a and 4b is an embodiment form of a locking plate of the device in accordance;

Fig. 5 is yet another embodiment form of the invention;

Fig. 6a thru 6c are a multiple number of view of a template part of the device in accordance with the invention;

Fig. 7 is the view following the arrow in Fig. 1;

Fig. 8 is a diagrammatic representation of the view upon a locking screw of the device in accordance with the invention; and

Fig. 9 is a side view of the locking screw of the device in accordance with the invention.

Figs. 1, 2 and 7 are a diagrammatic representation of a connection between a first profiled rod 1 and a second profiled rod 2 - resting on the front side against a

longitudinal side 100 of the first profiled rod 1 - by means of a corresponding device for the connection of these profiled rods 1, 2.

In a way, known in the abstract, the profiled rods 1, 2 are designed, e.g., of light metal and as having identical cross-section, whereby there exists an essentially square outline, and on all four longitudinal sides of the profiled rods 1, 2, an undercut longitudinal groove 10, reps. 20, as well as a continuous longitudinal borehole, centrally passing in the area of the central longitudinal axes L1, L2 of the profiled rods 1, 2, which longitudinal borehole is denoted by reference number 21 on the profiled rod 22, but not denoted in greater detail on profiled rod 1.

In order to attach the second profiled rod 2, which is resting on the front side against the longitudinal side 100 of the first profiled bar 1, a locking screw 3 is used, which is diagrammatically represented in greater detail in Fig. 9.

The locking screw 3 comprises a screwhead 32 as well as a threaded shank 30, extending in the direction of the longitudinal axis S of the screw, which threaded shank - in accordance with the embodiment form - is designed as having a standard thread or a self-cutting thread. The diameter of the threaded shank 30 is so selected that a screwing into the longitudinal borehole 21 of the profiled road 2 is made possible.

Moreover, in the area of transition of the screwhead 32 to the threaded shank 30 of the screw 3, there is provided a collar 31, transversely extending to the longitudinal axis S of the screw 3, which collar has a diameter, which is greater than the screwhead 32 and the threaded shank 30. Along the outer circumference of this protruding collar 31, there is designed a tooth system - which can be seen from the top view, depicted in Fig. 8 - whose [gear-]tooth profiles extend parallelly to the longitudinal axis S of the screw 3, and whose profile is designed so that it resembles a gearwheel.

In order for the connection - depicted in Fig. 1 - between the first profiled rod 1 and the second profiled rod 2 to be produced, the locking screw 3 - elucidated before - together with its head area, i.e. screwhead 32 and collar 31, having tooth system 310, is introduced - as a first step - into the undercut longitudinal groove 10 - facing the profiled rod 2 - of the first profiled rod 1, so that the threaded shank 30 of the locking screw 3 protrudes out of the undercut longitudinal groove 10 in the direction of the second profiled rod 2 to be attached.

The diameter of the screwhead 32, and, in particular, of the projecting collar, integrally molded thereon, is so selected that after the locking screw 3 has been introduced - in the way already elucidated - into the undercut longitudinal grove 10 of the profiled rod 1, the screwhead 32 together with the integrally molded collar

31grips behind the undercut longitudinal groove 10, i.e. partial circumferential sectors of the collar 31 form contact surfaces, which come in contact along the longitudinal side 100 of the profiled rod 1 onto the upper-side webs 12, delineating the undercut longitudinal groove 10, and prevent a removal of the locking screw 3 in the direction of the arrow P - as depicted in Fig. 1 - out of the undercut longitudinal groove 10 of the profiled rod 1.

Now, the second profiled rod 2 to be attached the profiled rod 1 is fixed in alignment onto the longitudinal side 100 of the first profiled rod 1 - as depicted in Fig. 7 - and indeed in such a way that the threaded shank 30 of the locking screw 3, which shank protrudes out of the undercut longitudinal groove 10 of the first profiled rod 1, is in alignment with the longitudinal borehole 21 inside the second profiled rod 2. The desired attachment of the second profiled rod 2 to the first profiled rod 1 can now be accomplished by screwing the threaded shank 30 of the locking screw into the longitudinal borehole 21 of the second profiled rod 2. To this end, the second profiled rod 2 - as depicted in the drawing - can be designed as having a threaded bushing, interacting with the threaded shank 30 of the locking screw 3, which threaded bushing is inserted into the longitudinal borehole 21, or the threaded shank 30 is designed as having a self-cutting thread, so that the locking screw 3 can directly be screwed into the second profiled rod 2.

Nevertheless, the turning of the locking screw 3 about its longitudinal axis S in the described mounting position, in which the screwhead 32 is inside the undercut longitudinal groove 10 of the first profiled rod 1 - which turning is required for the screwing of the locking screw 3 into the longitudinal borehole 21 of the second profiled rod 2 - cannot readily be accomplished with conventional turning tools.

However, the turning of the locking screw 3, in order for the desired attachment of the second profiled rod 2 on the first profiled rod to be achieved, can be carried out by means of the tooth system 310, designed along the circumference of the collar 31, if a correspondingly designed turning tool is fixed on the tooth system, and brought in operative connection thereto, which is also depicted in Fig. 1.

A bar-shaped wrench tool, having an offset (bent at an angle) end 61, which wrench tool has at least on its free end - denoted with reference symbol 60 in Fig. 1 - a tooth system, corresponding to the tooth system 310 of the locking screw 3, is used as turning tool 6. As depicted in Fig. 8, this tooth system is suitable to engage into the tooth system 310 of the collar 31 in a way resembling a gearbox or train of gears, so that by turning of the turning tool 6 in the direction of the arrow D2 as a result of engagement into the tooth system 310 of the locking screw 3, a desired

turning in the direction of the arrow D1 and vice versa, can be achieved. To this end - as depicted in Fig. 1 - the turning tool 6 is introduced by way of a suitable longitudinal groove 20 of the second profiled rod 2, and superimposed with its end 60, having the tooth system, in the groove bottom 11 of the undercut longitudinal groove 10 of the first profiled rod, and, indeed, in a position, in which the first profiled rod engages into the tooth system 310 of the locking screw 3, i.e. enters into an operative connection with the latter. When the turning tool 6 rotates around its longitudinal axis 3, the desired turning of the locking screw 3 is attained, in order for the attachment of the profiled rod 2 on the profiled rod 1 to be achieved.

In an analogous way, an attachment of the second profiled rod 2 on the first profiled rod 1 - as already explained in Fig. 1 - can also be again cancelled out by means of renewed use of the turning tool 6, while the locking screw 3 is unscrewed from the second profiled rod 2.

In each case, a connection between the first profiled rod 1 and the second profiled rod 2 is produced, which connection after having been accomplished, is almost invisible from outside, because it is solely the clamping screw 3 , which produces the connection, and the latter is arranged as almost invisible from outside, inside the undercut longitudinal groove 10 of the first profiled rod, and covered by the second profiled rod.

In order for the installation of a connection - designed in such a way between the first profiled rod 1 and the second profiled rod 2 by means of the locking screw 3 - to be facilitated, in the exemplified embodiment, depicted in Figs. 1, 2 and 7, there is provided a locking plate 4, which - prior to the producing of the connection between the first profiled rod 1 and the second profiled rod 2 is fixed on the front side to the second profiled rod 2.

The locking plate 4 has a two-way borehole (bolt hole) 40 in its central area, through which bolt hole the clamping screw 3 with its threaded shank 30 is passed through, in order to be screwed into the second profiled rod 2. When observed in the direction of the longitudinal axis L1 of the first profiled rod, the locking (anti-twisting) plate 4 has such a width that it fills up the width T, remaining between the webs 12 of the undercut longitudinal groove 10, i.e. is arranged between the two webs 12. Moreover, both end-areas, lying in the longitudinal direction of the first profiled rod 1, end flush with the second profiled rod 2 so that the locking plate 4 does not protrude beyond the contour of the second profiled rod.

Additionally, both of these ends, situated in the longitudinal direction of the first profiled rod 1, are designed as having a projection 42, each, which projections

42 protrude on the upper side out of the longitudinal groove 10 of the first profiled rod beyond its longitudinal side 100, and engage in a form-fitting (positive) way into the relevant undercut longitudinal groove 20 of the second profiled rod 2, in this case, they exactly engage between the webs 22a and 22 b (see Fig. 2), delineating the longitudinal grooves 20.

Therewith, the locking plate 4 engages with both of its angular projections 42 in a from-fitting (positive) way into second profiled rod 2, while the plate engages with its remaining area in a form-fitting way between the two webs 12 into the first profiled rod 1, which leads to the fact that a torsional twist of the profiled rod 2 about its longitudinal axis L2, when a superimposition takes place upon the profiled rod 1, and when the locking screw 3 is screwed, is precluded. Moreover, when a locking plate 4 is used, the profiled rod 2 is automatically retained in the desired angular alignment with regard to the profiled rod 1, which fact also extraordinarily facilitates the installation.

Moreover, in order for the installation to be additionally simplified, in the locking plate 4, on both sides of the two-way borehole 40 for the locking screw 3, there are yet arranged a guiding borehole 41a, 41b, respectively, which two-way boreholes - on their lower end, leading out into the longitudinal groove 10 of the first profiled rod 1 - communicate with the tooth system 310 of the locking screw

3, i.e. the tooth system projects out of the elongation of a partial-circumferential area of the guiding borehole 41a, resp. 41b. Concurrently, the diameter of the guiding boreholes 41a, 41b, and their course is so dimensioned that the turning tool 6 can be inserted into the guiding borehole 41a, rep. 41b, according to accessibility, and, in doing so, an operative engagement with the tooth system 310 of the locking screw 3 is accomplished, concurrently, however, as a result of the guiding inside the guiding borehole 41a, resp. 41 b, the turning tool 6 is secured against a sideslip and a cancelling of the operative connection to the tooth system 310. In particular, the course of the guiding boreholes 41a, 41b is also so selected that the turning tool 6 is automatically retained in place (see Fig 1), in an alignment that is advantageous for the activation, in which alignment the longitudinal axis L3 of the turning tool 6 concludes an angle from 5 to 20° with the longitudinal axis L2 of the second profiled rod 2.

An embodiment form, which is modified with respect to the exemplified embodiment, depicted in Figs. 1, 2 and 7, is diagrammatically represented in Figs. 3 and 4a thru 4b. In the case of this embodiment form, the same parts, as already used in the exemplified embodiment as depicted in Figs. 1, 2, and 7, are essentially used, however, the locking plate 4, in the area, surrounding the two-way borehole

40 for the locking screw 3 - in contradistinction to the first exemplified embodiment - is not embodied as having such a width that the locking plate engages between both webs 12 of the first profiled rod 1but - contrary to this - is designed as expanded, whereby this area is denoted with reference symbol 43 in the diagrammatic representations, depicted in Figs. 4a and 4b, and surrounds the two-way borehole 40 for the locking screw 3. The overall dimensions of this expanded area are so selected that the locking plate 4, as already the screwhead 32 with the collar 31 of the locking screw 3, is introduced into the undercut longitudinal groove 10 of the first profiled rod, and, then, with the expanded area 43 grips behind the undercut longitudinal groove 10 while in contact on the two webs 12. As can be seen in Fig. 4a by means of the circumferential line of the collar 31, denoted by a dotted line, the collar 31 of the locking screw 3 - in the case of the installation of a locking plate 4, designed in such a way - is not anymore directly positioned on the webs 12 of the first profiled rod, in order to bring about the attachment of the second profiled rod 2, but is supported by means of the expanded area 43 of the locking plate 4, which forms therewith a contact area for the locking screw 3, on the webs 12 of the first profiled rod 1. As a result of this, the strength of the materialized connection between the first profiled rod 1 and the second profiled rod 2 is increased by means of the locking screw 3, because the

locking plate 4 forms over its expanded area 43 a larger contact- and clamping-area for the locking screw 3.

All of the remaining parts of the locking plate 4, as depicted in Figs. 4a and 4b, correspond to the parts of the exemplified embodiment, depicted in Figs. 1, 2 and 7, and, hence, from now on, are not elucidated once again.

A third possible embodiment form of a profiled connection between the first profiled rod and the second profiled rod 2 is diagrammatically represented in Fig. 5 by means of the locking screw 3. In this exemplified embodiment, the locking screw 3 can be directly screwed - i.e. without the aid of a locking plate 4 - into the longitudinal borehole 21 of the second profiled rod 2 by means of the turning tool 6 whereby the collar 31, carrying the tooth system 310, is supported on the webs 12, delineating the undercut longitudinal groove 10 of the profiled rod 1.

In order for the desired turning of the locking screw 3 by means of the turning tool 6 to be facilitated, a template part 5 is used, which is represented in greater detail in Fig. 6a thru 6c. The template part 5 comprises a body 50, resembling a sliding block, which can be inserted into the undercut longitudinal groove 10 of the first profiled rod 1 in such a way that it can be shifted longitudinally, whereby its underside 500 is supported on the grove-bottom 11 of the undercut longitudinal groove 10 of the first profiled rod 1. In this position, the

upper side 501 of the template part 5 protrudes - between the webs 12 - out of the longitudinal groove 10 of the first profiled rod 1 whereby lateral recesses 51 accommodate the respective free ends of the webs 12 of the undercut longitudinal groove 10 of the first profiled rod 1.

After the template part 5 has been inserted into the undercut longitudinal groove 10 of the first profiled rod 1, the template part is shifted to such an extent along the longitudinal axis L1 of the first profiled rod 1 until it comes with its frontal side 502 into contact with the fixed profiled rod 2 to be attached. Because the profiled rods 1 and 2 are designed as analogous, the template part 5 - due to its replaceability and usability - can be inserted into the undercut longitudinal groove 10 of the first profiled rod 1, and in doing so also into the undercut longitudinal groove 20 of the second profiled rod 2, which groove is facing the first profiled rod 1, until the template part comes into contact with wall-system of the profiled rod 2, which wall-system surrounds the longitudinal borehole 21. As a result of this second engagement, namely - on the one hand - into the undercut longitudinal groove 10 of the first profiled rod, and - on the other hand - into the longitudinal groove 20 of the second profiled rod 2, the fixed template part 5 again acts as a protection for the second profiled rod 2 against torsional twisting with respect to the first profiled rod 1 over the course of the installation.

Moreover, in the area of the template part 5, which area is adjacent to the frontal side 502, coming into contact on the second profiled rod 2, there is designed a guiding borehole 52, which is passing along at a suitable angle. In the following exemplified embodiment, the guiding borehole 52 is embodied at an angle from 5 to 20°, approximately at half of the height of the frontal side 502, starting from the upper side 501, is lead out of the body 50 of the template part 5, and communicates - in the case of the front-side contact on the profiled rod 2, depicted in Fig 5 - with the tooth system 301 of the locking screw 31. From this point on, it is possible as depicted in Fig. 5, to insert the turning tool 5 into the guiding borehole 52, a a result of which the tool enters then - in the desired and suitable position - in operative contact with the tooth system 310 of the locking screw, and, as a result of the turning of the turning tool 6, the desired rotation of the locking screw 3 - in order for the connection between the first profiled rod 1 and the second profiled rod 2 to be materialized - can be produced. This rotation of the turning tool can be introduced without any problems by means of the offset end-area 61 of the turning tool.

In order for the template part 5 to be retained in its position over the course of its use, the template part is moreover designed, as having a locking device in the form of a locking screw 530 - having a handle 531 - which can be screwed in and

unscrewed in a corresponding borehole, penetrating the body 50, and can eb unscrewed for the purpose of the fixing of the template part 5 can be unscrewed on the underside 500 of the template part, as a result of which a fixing on the groove bottom 11 of the undercut longitudinal groove 10 of the first rod 1 is materialized, which locking device can again be removed by means of counter-activation, after the activation of the locking screw 3 has been terminated.

From Fig. 6 it is to be additionally deduced that the body 50 of the template part 5 is advantageously designed as having a smaller width than the width T, formed between the two webs 12, see Fig. 2, so that the body 50 can be inserted into the undercut longitudinal grove 10 without any problems. As a result of a minimal turning - with respect to these insertion positions, denoted with dotted lines in Fig. 6c - into the position diagrammatically represented with soled lines, the body 50 grips behind - with the help of its lateral recesses 51 - the webs 12, and wedges itself inside the undercut longitudinal groove 10 so that the template part 5, where applicable with the aid of the locking screw 530, is ready for operational use. From this point on, the introduction of the template part 5 can take place not only from the front side of the first profiled rod 1, which occasionally in the case of a large length of the profiled rod 1 can be located far away from the desired

connection to the profiled rod 2, but the template part 5 can directly be inserted - in immediate proximity to the profiled rod 2 to be connected - into the longitudinal groove 10 of the profiled rod 1, and rendered operative.

Claims of Protection

1. Device for the connection of a first profiled rod (1) to a second profiled rod (2), resting on the front-side against a longitudinal side (100) of the first profiled abr (1), whereby the profiled bars (1, 2) are designed along their longitudinal sides (100, 200) with undercut longitudinal grooves (10, 20), which device comprises a locking screw (3) - having screwhead (32) and a threaded shank (30) - which can be fixed in the area of the screwhead (32), in the undercut longitudinal groove (10) of the first profiled rod (1), and with the help of its threaded shank (30) can be screwed into a longitudinal borehole (21), designed in the second profiled rod (2), characterized in that in the area of its external circumference, the screwhead (32) has a tooth system (310), which can be brought into an operative connection with the help of a turning tool (6).

2. Device as claimed in claim 1, characterized in that the screwhead (31*) [*sic!!!] has a diameter that is larger than the diameter of the threaded shank (30), and grips behind the longitudinal groove (10) in the first profiled rod (1).

3. Device as claimed in one of the claims 1 or 2, characterized in that in the in the area of transition to the threaded shank (30), the screwhead (31*) [*sic!!!] of the locking screw (3) has a collar (31), having a diameter, which is enlarged with respect to the screwhead (32) and the threaded shank (30), and the tooth system (310) is designed in the area of the outer diameter of the collar (31).

4. Device as claimed in one of the claims 1 thru 3, characterized in that a locking plate (2) is provided, which can be attached on the front on the second profiled rod (2) by means of the locking screw (3), passed through a two-way borehole (4), designed in the locking plate (4), whereby the locking plate (4) engages into the longitudinal groove (10) of the first profiled bar (1), and the locking plate (4) has at least a guiding borehole (41a, b), communicating with the tooth system (310) of the locking screw (30, into which guiding borehole (41 a, b) the turning tool (6) can be introduced, and brought in operative connection to the toothed system (310).

5. Device as claimed in claim 4, characterized in that the locking plate(4) - on at least one of its ends, lying in the longitudinal direction of the first profiled

rod (1) - has a projection (42), bent at an angle in the direction of the second profiled rod (20, which projection (42) engages into the longitudinal groove (20) of the second profiled rod (2).

6. Device as claimed in one of the claims 4 or 5, characterized in that the on both sides of the two-way borehole (40) , the locking plate (3) has a guiding borehole (41 a, b) for the turning tool (6), respectively.

7. Device as claimed in one of the claims 4 thru 6, characterized in that the locking plate (4) is designed as enlarged in its area (43), surrounding the two-way borehole (40) for the locking screw (3), so that the locking plate (4) when inserted into the undercut longitudinal groove (10) of the first profiled rod (1) grips behind the longitudinal rod (10) with its enlarged area (43).

8. Device as claimed in one of the claims 4 thru 7, characterized in that the locking plate (4) - when contemplated in the longitudinal direction of the first profiled rod (1) - locks flush with the second profiled bar (2), and the guiding boreholes (41a, b) for the turning tool (6) communicate with a longitudinal groove (20) of the second profiled rod (2).

9. Device as claimed in one of the claims 1 thru 8, characterized in that there is provided a template part (5), which can be inserted into the longitudinal groove (10) of the first profiled rod (1) in such a way that it can longitudinally be

shifted therein, and can be applied on a longitudinal side of the second profiled rod (2), and has a guiding borehole (52), which - when the template part (5) is applied on the second profiled rod (2) - communicates with the tooth system (310) of the locking screw (3), and the turning tool (6) can be introduced into the guiding borehole (52) and can be brought into an operative connection with the tooth system (310).

10. Device as claimed in claim 9, characterized in that the template part (5) is a locking device (530), by means of which the template part (5) can be locked in the longitudinal groove (10) of the first profiled rod (21).

11. Device as claimed in one of the claims 4 thru 10, characterized in that the guiding boreholes (41a, b) are arranged as passing slantingly, at an angle of 5 to 20°, with respect to the longitudinal direction of the second profiled rod (2).

12. Locking screw - in particular for the connection of two profiled rods, arranged at right angle to one another - comprising a screwhead (32) and a threaded shank (30), characterized in that the screwhead (32) has a tooth system (310) in the area of its outer circumference, which tooth system can come into operative connection with a turning tool (6).

13. Locking screw, as claimed in claim 12, characterized in that the screwhead (32) has a diameter, which is enlarged with respect to the threaded

shank (30).

14. Locking screw, as claimed in one of the claims 12 or 13, characterized in that in the transitional area between screwhead (32) and threaded shank (30), there is integrally molded a projecting collar (31) having aan enlarged diameter with respect to the screwhead (32) and the threaded shank (30), and the tooth system (31))is designed along the outer circumference of the collar (31).

15. Device as claimed in one of the claims 12 thru 14, characterized in that the flanks of the tooth system (310) extend parallelly to the longitudinal axis (S) of the locking screw (3).

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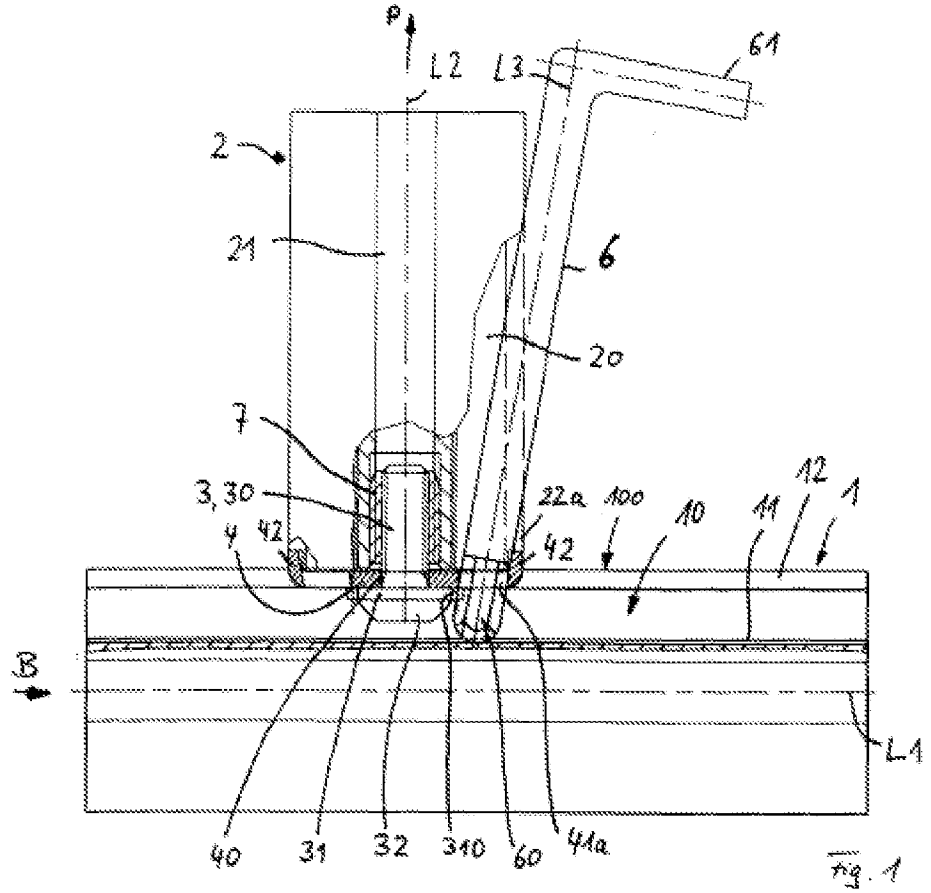

Fig. 1

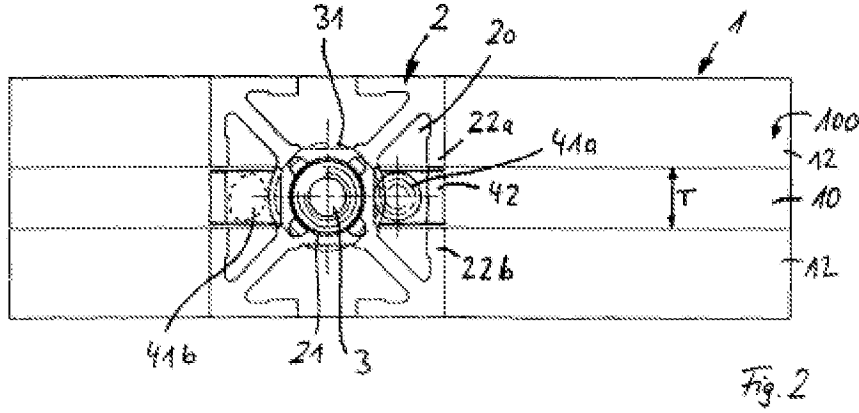

Fig. 2

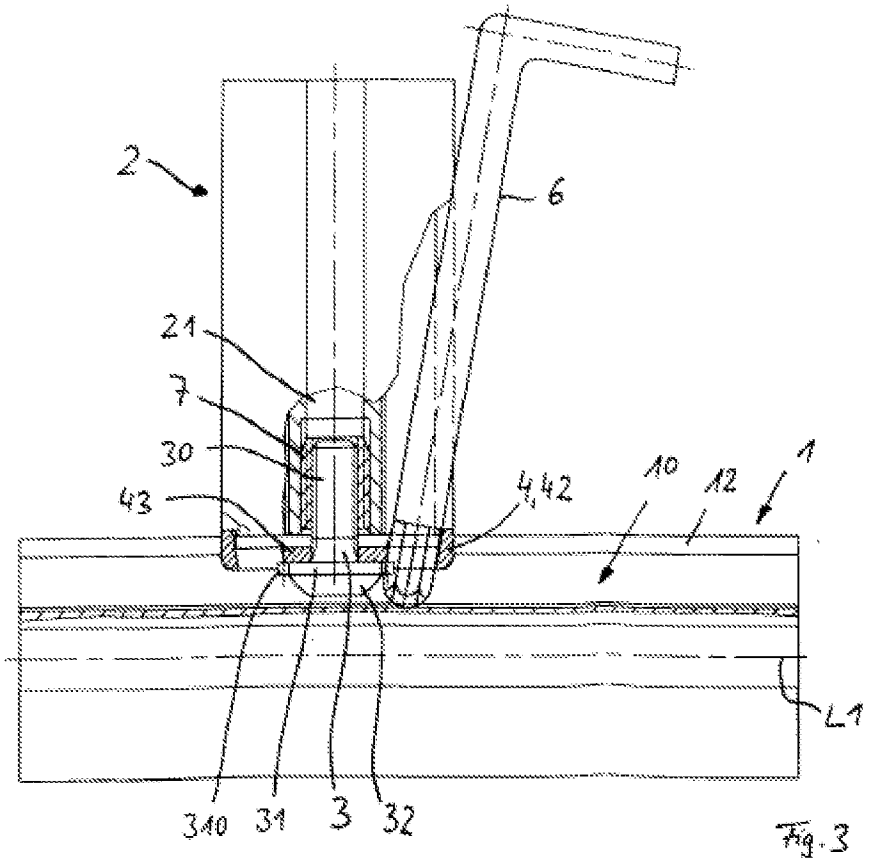

Fig. 3

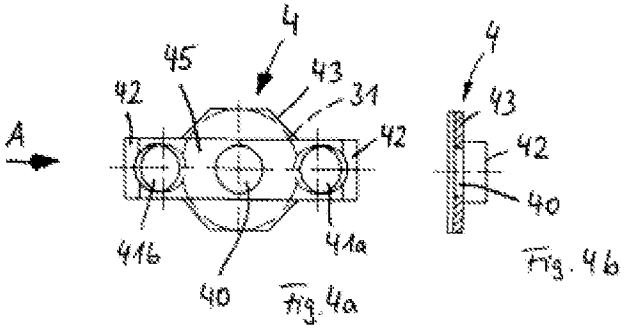

Fig. 4a

Fig. 4b

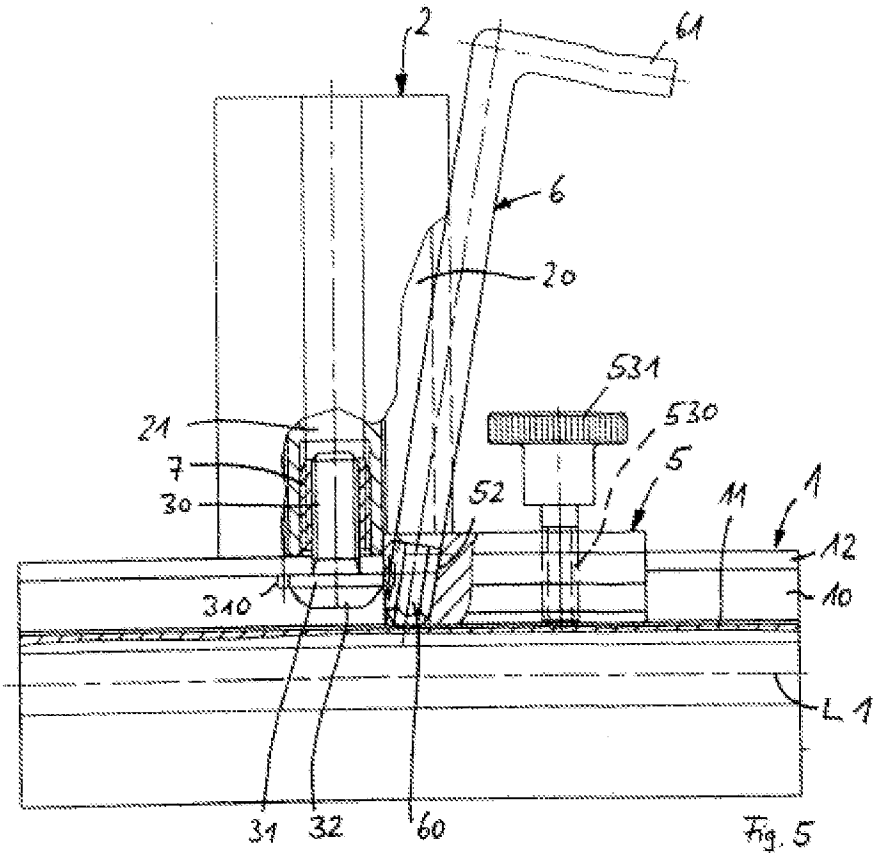

Fig. 5

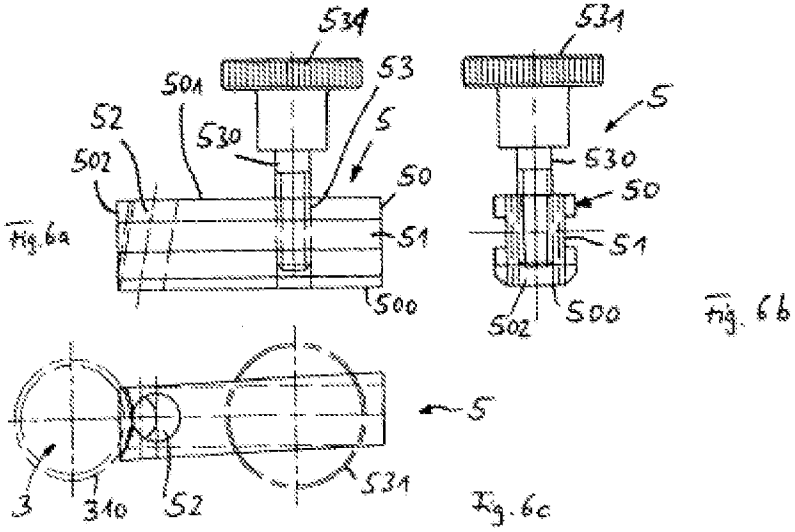

Fig. 6a

Fig. 6b

Fig. 6c

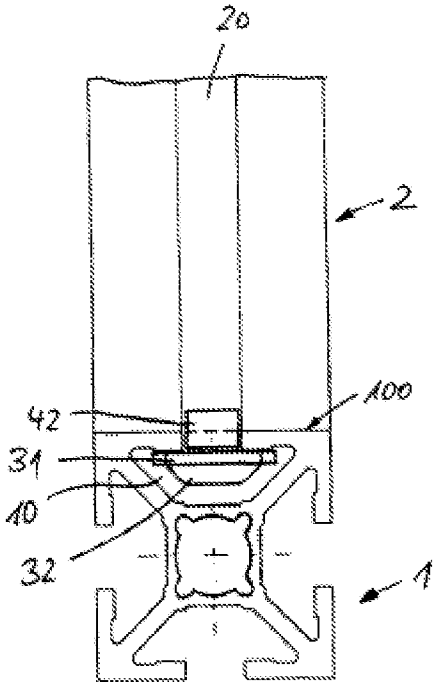

Fig. 7

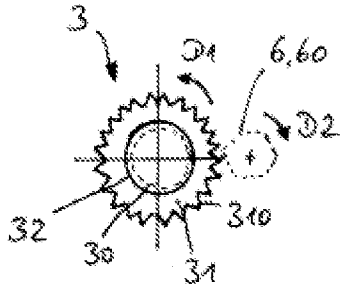

Fig. 8

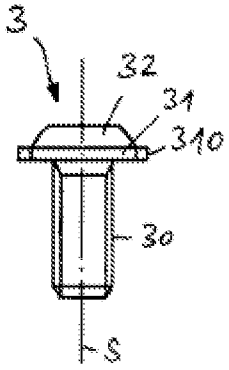

Fig. 9